

Refine Search

Search Results -

Term	Documents
RECYCLE	115011
RECYCLES	10147
TONER	208457
TONERS	27342
(8 AND (RECYCLE ADJ TONER)).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	10
(L8 AND (RECYCLE ADJ TONER)).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	10

Database:

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 US Patents Full-Text Database
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L13

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Search History

DATE: Monday, August 08, 2005 [Printable Copy](#) [Create Case](#)

Set Name Query

side by side

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result set

DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ

<u>L13</u>	L8 and (recycle adj toner)	10	<u>L13</u>
<u>L12</u>	L11 and (image adj forming)	75	<u>L12</u>
<u>L11</u>	L8 and (recycle or toner)	75	<u>L11</u>
<u>L10</u>	L8 and (stirring or member)	73	<u>L10</u>
<u>L9</u>	L4 and (rotational adj torque)	0	<u>L9</u>
<u>L8</u>	L4 and (rotational or torque)	75	<u>L8</u>
<u>L7</u>	L5 and (rotational adj torque)	0	<u>L7</u>

<u>L6</u>	L5 and (torque or rotational)	0	<u>L6</u>
<u>L5</u>	L1 and ((toner adj cycle) or (cvcycle adj toner))	4	<u>L5</u>
<u>L4</u>	L1 and ((toner adj recycle) or (recvcycle adj toner))	350	<u>L4</u>
<u>L3</u>	L1 ((toner adj recycle) or (recycle adj toner))	0	<u>L3</u>
<u>L2</u>	L1 ((toner adj cycle) or (cycle adj toner))	20	<u>L2</u>
<u>L1</u>	Image adj forming	277062	<u>L1</u>

END OF SEARCH HISTORY

Refine Search

Search Results -

Term	Documents
STIRR\$4	0
STIRR	3871
STIRRA	14
STIRRAALE	1
STIRRABE	1
STIRRABIE	3
STIRRABL	4
STIRRABLC	3
STIRRABLE	2834
STIRRABLO	1
STIRRABLY	3
(L18 AND STIRR\$4).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	8

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DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ

<u>L20</u>	L18 and stirr\$4	8	<u>L20</u>
<u>L19</u>	L17 and (rotation\$3 adj torque)	0	<u>L19</u>
<u>L18</u>	L17 and rotation\$3	37	<u>L18</u>
<u>L17</u>	L15 and (image adj form\$4 adj device)	131	<u>L17</u>
<u>L16</u>	L15 and (image adj form\$4)	384	<u>L16</u>
<u>L15</u>	(toner adj recycle)	493	<u>L15</u>
<u>L14</u>	(toner or recycle)	332274	<u>L14</u>
<u>L13</u>	L8 and (recycle adj toner)	10	<u>L13</u>
<u>L12</u>	L11 and (image adj forming)	75	<u>L12</u>
<u>L11</u>	L8 and (recycle or toner)	75	<u>L11</u>
<u>L10</u>	L8 and (stirring or member)	73	<u>L10</u>
<u>L9</u>	L4 and (rotational adj torque)	0	<u>L9</u>
<u>L8</u>	L4 and (rotational or torque)	75	<u>L8</u>
<u>L7</u>	L5 and (rotational adj torque)	0	<u>L7</u>
<u>L6</u>	L5 and (torque or rotational)	0	<u>L6</u>
<u>L5</u>	L1 and ((toner adj cycle) or (cvcycle adj toner))	4	<u>L5</u>
<u>L4</u>	L1 and ((toner adj recycle) or (recvcycle adj toner))	350	<u>L4</u>
<u>L3</u>	L1 ((toner adj recycle) or (recycle adj toner))	0	<u>L3</u>
<u>L2</u>	L1 ((toner adj cycle) or (cycle adj toner))	20	<u>L2</u>
<u>L1</u>	Image adj forming	277062	<u>L1</u>

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L20: Entry 6 of 8

File: USPT

Sep 7, 1999

DOCUMENT-IDENTIFIER: US 5950062 A

TITLE: Toner sorting device for separating reusable toner from used toner and image forming apparatus using the same device

Brief Summary Text (9):

Therefore, some image forming apparatuses use a net member for separating alien material such as paper dust and/or coagulated toner particles from collected residual used toner to recycle only reusable toner. Because meshes of the net member tend to become clogged by toner and/or paper dust, the net member is typically vibrated to prevent clogging of the meshes of the net member by the paper dust and/or toner.

Detailed Description Text (9):

For this example, the sieve 2a is held by the holding unit 2b at an end 2a.sub.1. The holding unit 2b engages with an axis of the toner conveying screw 0b and the sieve 2a is rotated as the holding unit 2b is rotated by rotation of the conveying screw 0b. The sieve 2a engages with the pipe-shaped unit 2c of the intake unit 1 at the other end, and the used toner conveyed by the toner conveying screw 0b through the toner conveying path 4d passing through the pipe-shaped unit 2c is moved into the sieve 2a through an opening of the pipe-shaped unit 2c. As the sieve 2a is rotated, reusable toner is separated from the used toner moved into the sieve 2a by passing through meshes of the sieve 2a.

Detailed Description Text (12):

The toner sorting device 0 can alternatively include a plurality of tubular sieves 2a and 2a' as shown in FIG. 3. The plurality of sieves 2a and 2a' is disposed in series in a direction in which collected used toner travels. A first sieve 2a in the direction in which the used toner is conveyed is connected with a second sieve 2a' via a connecting member and the second sieve 2a' is held by the holding unit 2b so that the sieves 2a and 2a' are rotated by the toner conveying screw 0b. Toner conveyed into the sifting unit 2 is first moved into the sieve 2a for separation. Toner which is not separated by the first sieve 2a is conveyed into the second sieve 2a' by rotation of the toner conveying screw 0b. Reusable toner respectively separated by the first sieve 2a and second sieve 2a' falls into the reusable toner collecting device 1b as indicated by arrows "B" and "B'" respectively. The used toner not separated by the second sieve 2a' is discharged from the second sieve 2a' and falls into the remaining toner collecting device 1c as indicated by an arrow "C."

Detailed Description Text (32):

FIG. 13 illustrates still another example of the sifting unit 2 of the toner sorting device 0 of FIG. 1 according to the present invention. As shown in FIG. 13, the sieve 2a is provided with a plurality of protrusions 2a.sub.6 on the internal circumferential surface extending in the axial direction and a mobile member 3d having a square pillar shape is held inside the sieve 2a. The mobile member 3d rolls as the sieve 2a is rotated and bounces when rolling over the protrusions 2a.sub.6. As the mobile member 3d rolls over the toner in the area "S," the toner sandwiched between the rolling mobile member 3d and the internal surface of the

sieve 2a is pressed against the sieve 2a so that the toner is pushed into meshes of the sieve 2a to pass through the meshes. The toner in the area "S" is stirred by the rolling and bouncing movement of the mobile member 3d, thereby enhancing fluidity of the toner. The toner is carried on the surface of the mobile member 3d, conveyed in a direction indicated by an arrow "E" and is moved back into the area "S" as the mobile member 3d rolls, further enhancing the fluidity of the toner. Coagulated toner is also broken into fragments by the rolling and bouncing movement of the mobile member 3d. The bouncing movement of the mobile member 3d applies a vibration to the sieve 2a, thereby preventing clogging of meshes of the sieve 2a. Thus, separation of reusable toner from the used toner is accelerated.

Detailed Description Text (52):

FIG. 23 is a sectional drawing illustrating an exemplary construction of the powder pump unit 201 of FIG. 22 which is used for conveying toner to the developing unit 16 from the toner bank 200. The powder pump unit 201 is disposed in the toner supplying path 5f (FIG. 22) which extends from a lower part of the toner bank 200 to connect to the developing unit 16. The powder pump unit 200 includes a screw-type pump, referred to as a Moineau-pump, which is constructed of a rotor 201a, a stator 201b and a holder 201c. The rotor 201a is engaged with a driving source such as a motor (not shown) via a driving shaft 201d, as shown in FIG. 23, or a lateral conveying screw in which a screw is provided on the outer circumferential surface of its axis. The rotor 201a is rotated by rotation of the driving source. The rotor 201a is enclosed by the stator 201b which is made of an elastic material such as rubber. The stator 201b is held by the holder 201c. Toner conveyed from the toner bank 200 is fed into the pump unit 201 of FIG. 22 from the side of the driving shaft 201d and the toner is conveyed towards a toner exit path 201e by rotation of the rotor 201a. A gap 201f of about 1 mm is formed between the outer circumferential surface of the stator 201b and the internal circumferential surface of the holder 201c. The gap 201f connects to the toner exit path 201e. An air supplying inlet 201g is provided to supply air through the gap 201f into the toner exit path 201e. The air supplying inlet 201g connects to an air outlet 201h.sub.1 of an air pump 201h through an air supplying pipe 201h.sub.2. When the air pump 201h is activated, about 0.5 to 1 liter per minute of air is pumped into the toner exit path 201e through the air supplying pipe 201h.sub.2 and the air supplying inlet 201g. Fluidity of the toner in the toner exit path 201e is enhanced and the toner mixed with air is moved to the toner supplying path 5f to be conveyed to the toner hopper 16a of the developing unit 16.

CLAIMS:

46. The toner sorting device according to claim 1, further comprising means for conveying the reusable toner collected by the reusable toner collecting means to an image forming device of the image forming apparatus.

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